# LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



## OFFICE OF FISHERIES INLAND FISHERIES SECTION

PART VI -C (ARCHIVES)

WATERBODY MANAGEMENT PLAN SERIES

## **BLACK BAYOU LAKE**

AQUATIC VEGETATION TYPE MAPS AND NARRATIVES - 2016

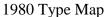
## **APPENDIX III** – Aquatic Vegetation Type Maps (<u>return to aquatic vegetation</u>)

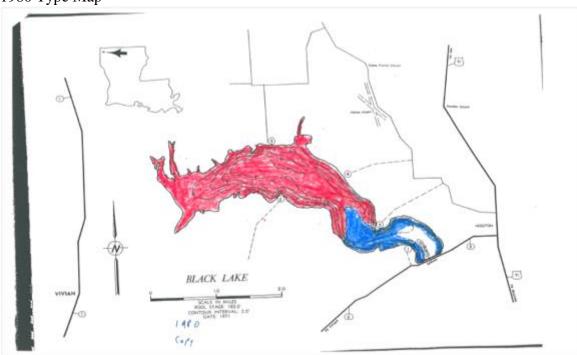
Black Bayou Lake – Aquatic Vegetation Type Map and Narrative – 1980

#### Black Bayou Lake (Caddo Parish) August 1980

Black Bayou Lake had some heavy to severe infestations of Brazilian elodea (*Egeria densa*) at the time of the survey. The lake was undergoing a drawdown at this time and no further information could be obtained.

Melvin Bagwell Aquatic Specialist





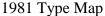
#### Black Bayou Lake (Caddo Parish) 1981

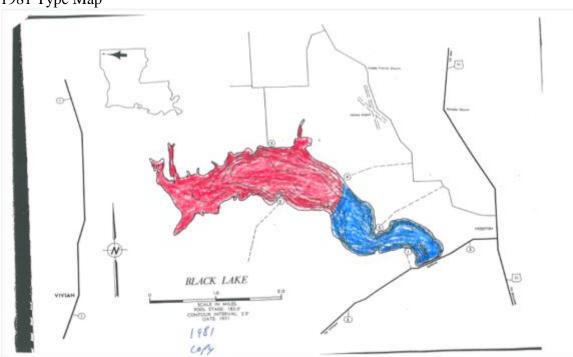
At the time of assessment Black Bayou Lake was at pool stage. Water color varied from clear to stained. Some areas had a plankton bloom while other areas of the lake did not show evidence of a plankton bloom.

The aquatic plants noted were fanwort (Cabomba caroliniana), Brazilian elodea (Egeria densa), coontail (Ceratophyllum demersum), bladderwort (Utricularia spp.), and pondweed (Potamogeton spp.). The infestations of aquatic plants ranged from severe in the upper end to moderate in areas on the lower end of the lake. These infestations were principally fanwort (Cabomba caroliniana) and coontail (Ceratophyllum demersum) with some Brazilian elodea (Egeria densa) in the lower end. The other plants mentioned were not present in sufficient quantities to be problematic.

Duckweed (Lemna spp.) was also noted during the survey.

Melvin Bagwell Aquatic Plant Control Worker III



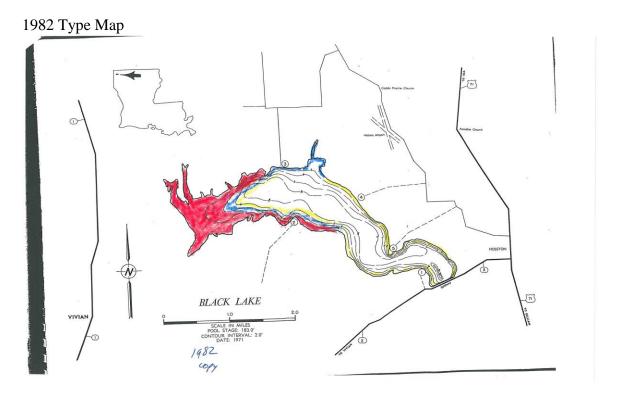


#### Black Bayou Lake (Caddo Parish) 1982

At the time of the assessment Black Bayou Lake was at pool stage. The color of the water was good. The water had a good plankton bloom.

The marginal and emersed plants noted were cattail (*Typha spp.*), baccharis (*Baccharis spp.*), water lily (*Nymphaea spp.*), spikerush (*Eleocharis spp.*), smartweed (*Polygonum spp.*), sedge (*Cyperus spp.*), and bulrush (*Scirpus spp.*). The lower end of the lake had an infestation of cattail (*Typha spp.*) and water lily (*Nymphae spp.*). The infestation of water lily (*Nymphae spp.*) was light and in one area. The other species mentioned were in very light infestations.

The submersed species noted were Brazilian elodea (*Egeria densa*), fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia spp.*). The upper one third of Black Bayou had a severe to moderate infestation of Brazilian elodea (*Egeria densa*) mixed with fanwort (*Cabomba caroliniana*) and coontail (*Ceratophyllum demersum*). The lower end had little to no plants at all.



#### Black Bayou Lake (Caddo Parish) 1983

At the time of the assessment Black Bayou was at pool stage. The lower portion of the lake had a good plankton bloom.

The emergent plants noted were cattail (*Typha spp.*), water lily (*Nymphaea spp.*), spikerush (*Eleocharis spp.*), and smartweed (*Polygonum spp.*).

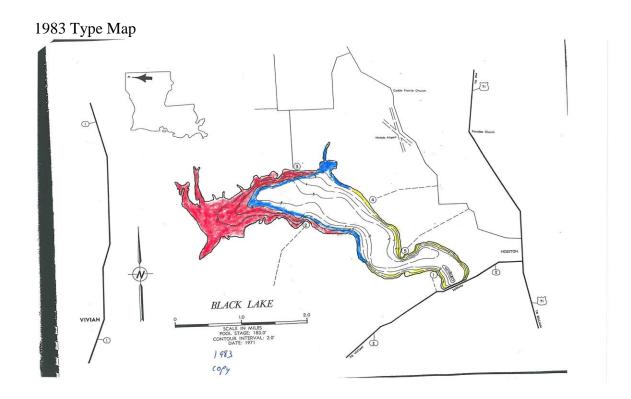
The marginal plants noted were baccharis (*Baccharis spp.*), sedge (*Cyperus spp.*), and bulrush (*Scirpus spp.*).

The emergent and marginal plants were in light infestation and causing no problems.

The submersed species noted were Brazilian elodea (*Egeria densa*), fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), and bladderwort (*Utricularia spp.*).

The upper one third of Black Bayou has a severe to moderate infestation of Brazilian elodea (*Egeria densa*) mixed with fanwort (*Cabomba caroliniana*), and coontail (*Ceratophyllum demersum*).

The lower end of the lake has some light infestations of fanwort (*Cabomba caroliniana*) and bladderwort (*Utricularia spp.*) and in some spots Brazilian elodea (*Egeria densa*).



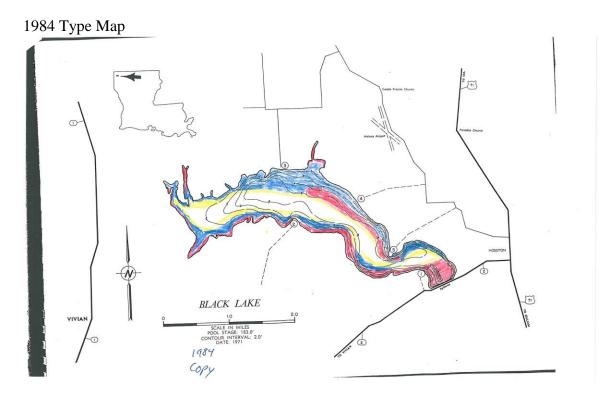
#### Black Bayou Lake (Caddo Parish) 1984

At the time of the assessment Black Bayou Lake was at pool stage. The water had a fair to poor plankton bloom.

The infestations ranged from severe to light. The severe infestations were almost pure Brazilian elodea (*Egeria densa*), with an occasional sprig of fanwort (*Cabomba caroliniana*). The moderate infestations were all Brazilian elodea (*Egeria densa*). The light infestations were all Brazilian elodea (*Egeria densa*).

The marginal plants noted were cattail (*Typha spp.*), black willow (*Salix nigra*), bulrush (*Scirpus spp.*), maidencane (*Panicum hemitomon*), smartweed (*Polygonum spp.*), and water primrose (*Ludwigia octovalvis*).

In summary Black Bayou Lake is in poor condition. The severe infestations of Brazilian elodea (*Egeria densa*) impedes boating and fishing. Although the plants are a problem the fishermen still catch fish frequently. The marginal plants are in tolerable amounts and causing no problem.



#### Black Bayou Lake – Aquatic Vegetation Assessment – 1985

#### Black Bayou Lake (Caddo Parish) August 1985

At the time of assessment Black Bayou was at pool stage. Water clarity ranged from 2 feet in the lower end to 4.5 feet in the upper end.

Aquatic plant infestations ranged from moderate to severe. The severe infestations were comprised almost entirely of Brazilian elodea (*Egeria densa*). The coverage of the plants extended to the 8 foot contour. Although the pants are actively growing all over the entire lake, the extent of Brazilian elodea (*Egeria densa*) coverage diminishes at the edge of the cypress / tupelo forest in the upper half of the lake. The moderate infestations are almost entirely in the upper end of the lake and are comprised primarily of fanwort (*Cabomba caroliniana*) with Brazilian elodea (*Egeria densa*), coontail (*Ceratophyllum demersum*), and bladderwort (*Utricularia spp.*) being secondary plants. There has been a very significant increase in submersed aquatic plants since last year's assessment.

Above narrative is an excerpt from a 1985 vegetation management recommendation by Louie Richardson which has been corrected and edited by James Seales in March, 2012. There has been no accompanying type map found in the files.

#### Black Bayou Lake (Caddo Parish) 1988

At the time of assessment Black Bayou Lake was at pool stage. The color of the water was good.

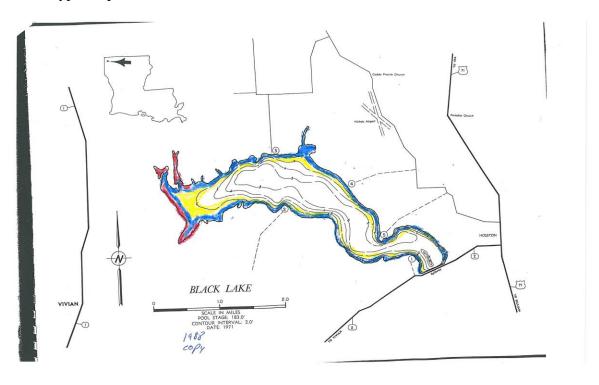
A noticeable plankton bloom was present in most areas. The increase in plankton may be attributed to the increase in fertility caused by dead vegetation.

The submersed aquatic plants noted were Brazilian elodea (*Egeria densa*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia spp.*), and southern naiad (*Najas guadalupensis*).

The emersed plants noted were American lotus (*Nelumbo lutea*) and water primrose (*Ludwigia octovalvis*).

In summary Black Bayou Lake is in fair condition. The drawdown in the fall of 1987 has had a great impact on submersed aquatic plants. There has been a significant decrease in Brazilian elodea (*Egeria densa*) and coontail (*Ceratophyllum demersum*) in every area. bladderwort (*Utricularia spp.*) was present in almost all areas but in small amounts.

1988 Type Map



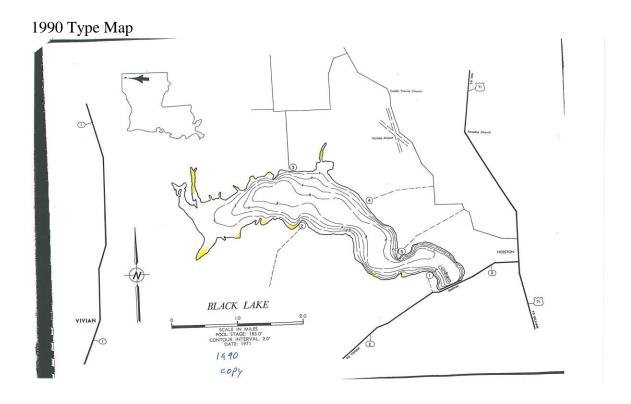
#### Black Bayou Lake (Caddo Parish) 1990

Black Bayou, Caddo Parish was assessed for aquatic plants in August 1990. At the time of assessment Black Bayou was at pool stage. The water color showed much plankton and in most areas it was a brown color.

Aquatic plant infestations were very sparse. Muskgrass (*Chara spp.*) was the most noted plant and all infestations were light to none existent. Filamentous algae were present in all areas. At this time higher vascular plants were not noted.

In summary the drawdown of the previous year produced an ecological shock that killed off all higher vascular plants. Black Bayou is in very good condition.

Narrative transposed and corrected by James Seales on 7-12-11 from handwritten notes that were likely made by Melvin Bagwell.



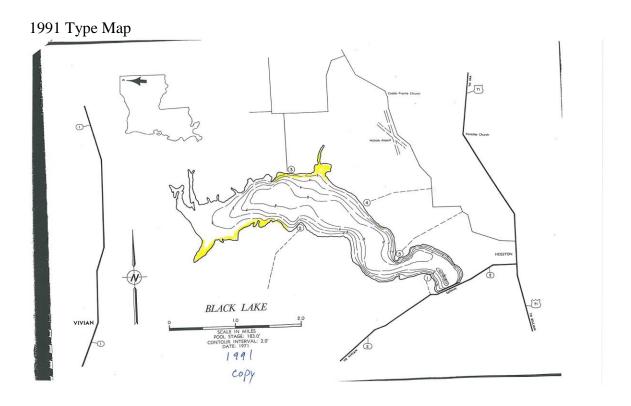
#### Black Bayou Lake (Caddo Parish) 1991

At the time of assessment Black Bayou was at pool stage. The water had a light amount of turbidity and a very good plankton bloom. The Secchi disc reading was 20 inches.

The submersed aquatic plants noted were coontail (*Ceratophyllum demersum*) and filamentous algae.

The emersed plants noted were cattail (*Typha spp.*), smartweed (*Polygonum spp.*), alligator-weed (*Alternanthera philoxeroides*), and water primrose (*Ludwigia octovalvis*).

In summary Black Bayou Lake has an area of moderately infested aquatic plants in the upper end. The mid and lower portion of Black Bayou Lake had very light infestation. The lake was subjected to flooding in early spring.



Black Bayou Lake (Caddo Parish) 1992

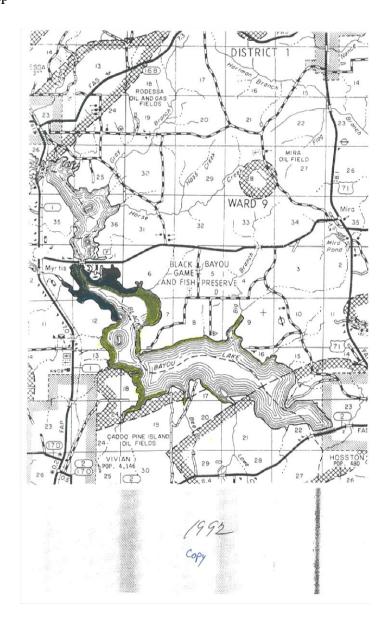
Black Bayou, Caddo Parish, was surveyed for aquatic plants in July 1992.

At the time of the survey Black Bayou was at pool stage. The water color ranged from turbid in lower and mid portion to very clear in the upper end.

The primary aquatic plant noted in Black Bayou was fanwort (*Cabomba caroliniana*). The secondary plants were bladderwort (*Utricularia spp.*), coontail (*Ceratophyllum demersum*), milfoil (*Myriophyllum spp.*) and southern naiad (*Najas guadalupensis*).

The upper end of Black Bayou has had an increase in aquatic plants, primarily fanwort (*Cabomba caroliniana*). Most infestations are in depths of 7 feet, but some plants are out to 9 feet.

Narrative transposed on 7-12-11 and corrected in March 2012 by James Seales from handwritten notes that were likely made by Melvin Bagwell.



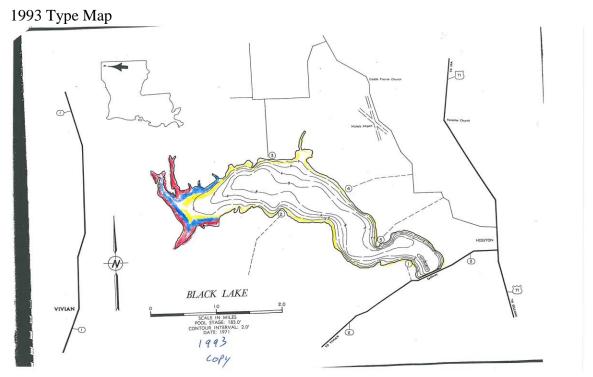
#### Black Bayou Lake (Caddo Parish) 1993

At the time of assessment Black Bayou (Caddo) was at pool stage. The weather was clear. The water clarity ranged from clear to turbid. The secchi disc reading in the upper end was 84" and in the lower end 55". The pH reading in the upper end was 6.8 and in the lower end 7.1.

The submersed aquatic plants noted were found primarily in the upper end in thick timber. The primary plant in the upper end was fanwort (*Cabomba caroliniana*). The secondary plant was southern naiad (*Najas guadalupensis*) and coontail (*Ceratophyllum demersum*). Most infestations were severe to moderate in the upper end. The mid and lower portion of Black Bayou had very light infestations of southern naiad (*Najas guadalupensis*), coontail (*Ceratophyllum demersum*) and some filamentous algae.

In summary, Black Bayou has a 15% total area infestation. Total infestation is 50% severe, 20% moderate and 30% light.

Narrative transposed on 7-12-11 and corrected March 2012 by James Seales from handwritten notes that were likely made by Melvin Bagwell.



Black Bayou Lake – Aquatic Vegetation Type Map and Narrative – 1994

#### Black Bayou Lake (Caddo Parish) 1994

At the time of assessment Black Bayou was at pool stage. The water color was green stained and slightly turbid. The secchi disc reading was 40 inches at the dam and 56 inches in the upper end. The pH reading was 7.7.

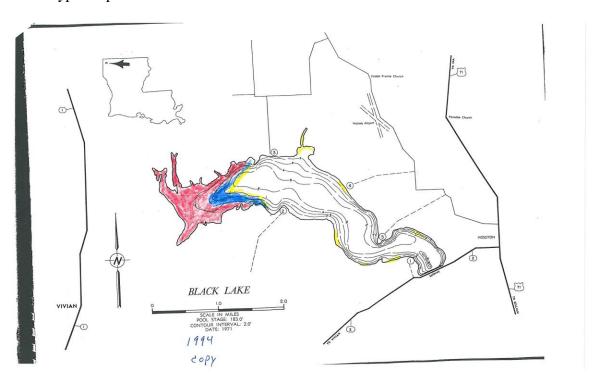
The submerged aquatic plants noted were fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia spp.*), southern naiad (*Najas guadalupensis*), coontail (*Ceratophyllum demersum*), muskgrass (*Chara spp.*), and filamentous algae.

The submersed aquatic plants plant infestations in Black Bayou are principally in the upper one third of the lake. The infestations range from light to severe. The severe infestations are in the extreme upper end.

The plants broke at 8 feet.

Narrative transposed on 7-12-11 and corrected in March 2012 by James Seales from handwritten notes that were likely made by Melvin Bagwell.

#### 1994 Type Map



#### Black Bayou Lake – Aquatic Vegetation Assessment Narrative – 1995

#### Black Bayou Lake (Caddo Parish) 1995

No assessment of aquatic plants or sampling was done on Black Bayou in 1995 because of the drawdown situation.

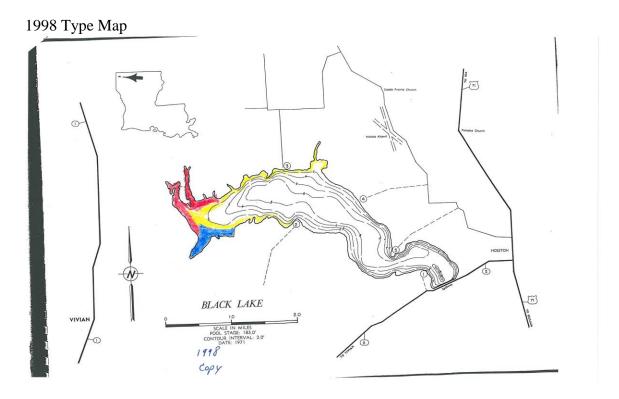
Narrative transposed on 7-12-11 by James Seales from handwritten notes that were likely made by Melvin Bagwell.

#### Black Bayou Lake (Caddo Parish) 1998

At the time of the assessment Black Bayou was at pool stage. The water color was clear with some turbidity in the upper end.

The submersed aquatic plants surveyed were fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), and bladderwort (*Utricularia spp.*) The floating and emersed plants surveyed were water hyacinth (*Eichhornia crassipes*), duckweed (*Lemna spp.*), fragrant water lily (*Nymphaea odorata*), water primrose (*Ludwigia octovalvis*), smartweed (*Polygonum spp.*) and bulrush (*Scirpus spp.*).

The distribution of aquatic plants in Black Bayou Lake was moderate to severe in the upper end to light in the mid and lower portion. Total infested area was an estimated 15%.

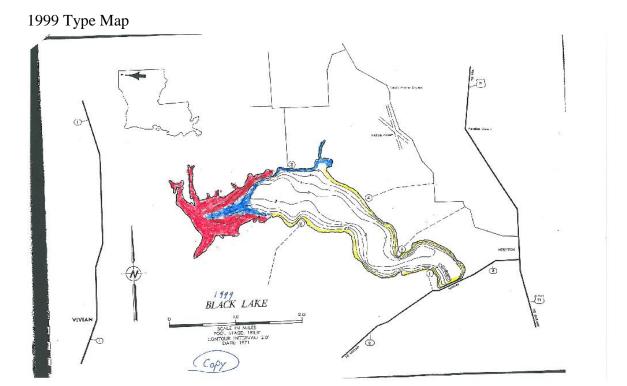


#### Black Bayou Lake (Caddo Parish) 1999

At the time of the assessment Black Bayou Lake was at pool stage. The color of the water was clear.

The submersed aquatic plants noted were bladderwort (*Utricularia* spp.), fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), and southern naiad (*Najas guadalupensis*). The infestations of submersed aquatic plants were light in the lower end and middle portion and moderate to severe in the upper end.

The emersed aquatic plants noted were water hyacinth (*Eichhornia crassipes*), fragrant water lily (*Nymphaea odorata*), smartweed (*Polygonum* spp.), water primrose (*Ludwigia octovalvis*), and cattail (*Typha* spp.). The infestations of these plants were light and marginal in all areas. The infestation of water hyacinth (*Eichhornia crassipes*) was moderate in the middle portion of the lake.



#### Black Bayou Lake – Aquatic Vegetation Assessment Narrative – 2000

## Black Bayou Lake (Caddo Parish) 2000

The Aquatic Plant Section of LDWF conducted an aquatic weed survey on Black Bayou Lake on June 14, 2000. Aquatic plant infestations ranged from moderate to severe. Submerged aquatic plants infested approximately 35% to 40% of the lake with fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia* spp.), coontail (*Ceratophyllum demersum*), and southern naiad (*Najas guadalupensis*), being the most abundant species. The infestation was more severe on the north side of the lake within the standing cypress timber and shallow water zone (5 feet or less). The portion of Black Bayou Lake north of the bridge crossing on Mira – Myrtis road had a 90% to 100% infestation of submerged aquatics outside the main channel going north. Many camp owners along the eastern shoreline are having access problems due to water hyacinth (*Eichhornia crassipes*), alligator-weed (*Alternanthera philoxeroides*), water primrose (*Ludwigia octovalvis*), and duckweed (*Lemna* spp.) congesting the boat roads. Water hyacinth (*Eichhornia crassipes*) covers approximately 20% of the surface of the lake.

At the time of the survey, Black Bayou Lake had an estimated 60% of its water surface available for fishing and other water oriented recreational opportunities. Submerged aquatic macrophytes were generally confined to waters 5 feet or less in depth. No stands of aquatic macrophytes were observed in waters deeper than 6 feet.

Above text excerpted from a Black Bayou Lake drawdown proposal written by Malcolm Leatherman in July of 2000. The text was excerpted, edited and corrected by James Seales in March of 2012. It is not certain as to who conducted the field survey. No associated type map has been found in the files.

## Black Bayou Lake (Caddo Parish) 2006

A vegetation type mapping survey was conducted on Black Bayou Lake (3,968 acres/Caddo Parish) on November 3, 2006 by Louisiana Department of Wildlife and Fisheries, Inland Fisheries personnel. Jeff Sibley, Todd Bridges, and Patricia Baker identified the major aquatic plant species present in the lake and assessed the extent of coverage around the lake. At the time of the survey, the lake was 18" below pool. Secchi readings ranged from 12 inches in the main lake area (due to recent rains); to in excess of 4 feet in heavily vegetated areas.

The following species of aquatic macrophytes were identified in Black Bayou Lake: hydrilla (Hydrilla verticillata), coontail (Ceratophyllum demersum), southern cutgrass (Leersia hexandra), American lotus (Nelumbo lutea), fragrant water lily (Nymphaea odorata), water hyacinth (Eichhornia crassipes), primrose (Ludwigia spp.), alligator weed (Alternanthera philoxeroides), fanwort (Cabomba caroliniana), pondweed (Potamogeton spp.), watermeal (Wolffia spp.), southern naiad (Najas guadalupensis), southern watergrass (Luziola fluitans) and arrowhead (Sagittaria spp.).

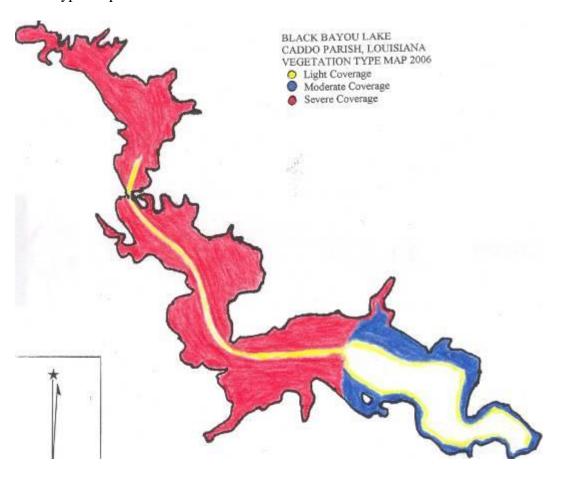
Aquatic vegetation covers approximately 70-75% of Black Bayou Lake. The lake can be bisected into two sections. The upper part of the lake is a dense cypress – tupelo forest and access is limited to the main channel for most vessels. The lower part of the lake has standing cypress trees, but is a much more "open-lake" environment. The entire waterbody is shallow and flat with few areas exceeding 8 feet in depth.

Hydrilla (*Hydrilla verticillata*) was present near the public boat launch at the dam, but decreased in density as one traveled away from the launch. Submerged vegetation was predominant on the open water part of the lake. Submerged vegetation expands across the entire lake bottom as one goes up the lake. The shallow water and lack of bottom contours have allowed the vegetation to expand. Submerged macrophytes are even present in the marked boat lane in some areas, but may not be topped out due to boat traffic. Fanwort (*Cabomba caroliniana*) was found out to 8 feet below normal pool stage.

In the forested part of the lake, the aquatic vegetation community changed somewhat. Floating plants were more prevalent. Large rafts of water hyacinth (*Eichhornia crassipes*) were present amongst the trees and watermeal (*Wolffia* spp.) densities increased dramatically.

Above text edited, condensed and corrected by James Seales.

### 2006 Type Map



## Black Bayou Lake 2009

The vegetation type mapping survey was conducted on Black Bayou Lake (3,968 acres/Caddo Parish) in June 2009 by employees of the Louisiana Department Wildlife and Fisheries, Inland Fish Division. Personnel identified the major aquatic plant species present in the lake and assessed the extent of coverage around the lake. At the time of the survey, the lake was at pool stage.

The following species of aquatic macrophytes were identified in Black Bayou Lake: hydrilla (Hydrilla verticillata), coontail (Ceratophyllum demersum), southern cutgrass (Leersia hexandra), American lotus (Nelumbo lutea), fragrant water lily (Nymphaea odorata), water hyacinth (Eichhornia crassipes), primrose (Ludwigia spp.), alligator weed (Alternanthera philoxeroides), fanwort (Cabomba caroliniana), pondweed (Potamogeton spp.), watermeal (Wolffia spp.), southern naiad (Najas guadalupensis), southern watergrass (Luziola fluitans), arrowhead (Sagittaria spp.) and giant salvinia (Salvinia molesta).

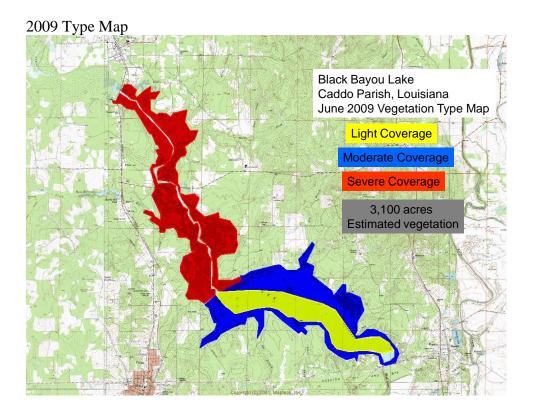
Aquatic vegetation covers approximately 80% of Black Bayou Lake. The lake can be bisected into two sections. The upper part of the lake is a dense cypress – tupelo forest and access is limited to the main channel for most vessels. The lower part of the lake has standing cypress trees, but is a much more "open-lake" environment. The entire waterbody is shallow and flat with few areas exceeding 8 feet in depth.

Hydrilla (*Hydrilla verticillata*) was present near the public boat launch at the dam, but decreased in density as one traveled away from the launch. Submerged vegetation was predominant on the open water part of the lake. Submerged vegetation expands across the entire lake bottom as one goes up the lake. The shallow water and lack of bottom contours have allowed the vegetation to expand. Submerged macrophytes are even present in the marked boat lane in some areas, but may not be topped out due to boat traffic. Fanwort (*Cabomba caroliniana*) was found growing to depths of 8 feet.

In the forested part of the lake, the aquatic vegetation community changed somewhat. Floating plants were more prevalent. Large rafts of water hyacinth (*Eichhornia crassipes*) were present amongst the trees and watermeal (*Wolffia* spp.) densities increased dramatically.

Giant salvinia (*Salvinia molesta*) was first found in the lake in 2007 near the two public ramps. It has expanded slowly on this lake relative to other waterbodies in the region. There was less than 25 acres of giant salvinia (*Salvinia molesta*) on the lake at the time of the survey and is generally found in small mats on top of submerged vegetation or primary plants mixed in with watermeal (*Wolffia* spp.). This slow expansion of plants is most likely due to competition with the tremendous amounts of other aquatic plants present. Small amount of giant salvinia (*Salvinia molesta*) could be found near the public launch by the spillway, but most giant salvinia (*Salvinia molesta*) was found in the forested portions of the lake and especially in areas above the Noah Tyson Park.

Above text edited, condensed and corrected by James Seales.



#### Black Bayou Lake Caddo Parish, La Vegetation Type Map 2014

The vegetation type mapping survey was conducted on Black Bayou Lake (3,968 acres/Caddo Parish) on September 8, 2014 by employees of the Louisiana Department Wildlife and Fisheries, Inland Fish Division. Kevin Houston and Jeff Sibley identified the major aquatic plant species present in the lake and assessed the extent of coverage around the lake. At the time of the survey, the lake was at pool.

#### **Species Present**

The following species of aquatic macrophytes were identified in Black Bayou Lake: coontail (*Ceratophyllum demersum*), cutgrass (*Leersia hexandra*), pennywort (*Hydrocotyle umbellata*), American frogbit (*Limnobium spongia*), bladderwort (*Utricularia* spp.), American lotus (*Nelumbo lutea*), fragrant water lily (*Nymphaea odorata*), water hyacinths (*Eichhornia crassipes*), primrose species (*Ludwigia spp.*), alligator weed (*Alternanthera philoxeroides*), duckweed (*Lemna minor*), watermeal (*Wolffia columbiana*), *Sagittaria* spp., and giant salvinia (*Salvinia molesta*).

#### Severity

Aquatic vegetation covers approximately 49% of Black Bayou. The lake can be bisected into two sections. The upper part of the lake is heavily forested with tupelo and cypress trees. Giant salvinia and emergent vegetation cover this area limiting access to the main channel for most vessels. The lower part of the lake has standing cypress trees, but is a much more "open-lake" environment. The entire waterbody is shallow and flat with few areas exceeding 10'.

The lower end of the lake was found to be seemingly void of submerged aquatic vegetation (SAV). Several transects were made across the lake using a drag to check for the presence of SAV. While there is very likely a presence of hydrilla and fanwort remaining in the lake, no live submerged aquatic vegetation was recovered. A tremendous amount of decaying vegetation was found on the lake bottom. Black Bayou Lake has had historical problems with excessive organics and the problem appears to have been compounded following the decline of SAV and the decaying giant salvinia following the winter of 2013/14. Giant salvinia was very scattered on the open portion of the lake. Small, disconnected fringes of salvinia could be found along the shoreline primarily in cypress thickets.

#### **Future Vegetation Management**

Black Bayou Lake has historically had severe problems with submerged vegetation. During 2013, giant salvinia nearly covered the entire lake and shaded out most of the submerged vegetation in Black Bayou. Additionally, 17,500 triploid grass carp were stocked in 2013 as a control measure for this historical problem on the lake. At the time of this survey, only a small amount of bladderwort was found near the Noah Tyson boat launch. Based upon this assessment, there is currently no need to add additional grass carp.

The strategy of deploying a boom across the lake appears to be aiding in control efforts in the moreopen portion of the reservoir. The current vegetation management practices in place should be continued. Herbicide efforts should be concentrated on the area below the boom and the boom remain in place until a time when control can no longer be maintained on the lower half of the lake. A containment boom was installed at the public boat ramp in 2013 and should be maintained to allow boaters plant-free access into the lake.

Giant salvinia has steadily expanded since the 2012 partial-drawdown and is now the dominant plant in the lake. The recommendation against utilizing drawdowns for vegetation control on Black Bayou was changed in 2012 by former staff. Consecutive years of excessive SAV prompted a change in the receptiveness of the lake commission towards drawdowns. It was then decided to implement a mid-summer drawdown followed by a stocking of triploid grass carp to control SAV. The drawdown reduced competing vegetation and allowed the rapidly reproducing giant salvinia to outcompete other vegetation.

Further introductions of the salvinia weevils should be made in 2015 and herbicide efforts concentrated on the open portion of the lake. If current control efforts are not adequate for long-term control, then a drawdown centered plan needs to be developed to set back the salvinia each year. Given the habitat characteristics of Black Bayou Lake, additional benefits aiding the fish populations and slowing the eutrophication process should be seen from water level fluctuations. Now that giant salvinia has expanded, drawdowns may be the best remaining treatment option for future years.

